



# Chapter 18

## Upper Level ISEE Practice Test



This test is also available in an online format when you register this book at [PrincetonReview.com](http://PrincetonReview.com). See the *Get More (Free) Content* page after the Table of Contents for instructions.

# Upper Level ISEE Practice Test

Be sure each mark *completely* fills the answer space.

## SECTION 1 - Verbal Reasoning

- |                   |                    |                    |                    |                    |
|-------------------|--------------------|--------------------|--------------------|--------------------|
| 1 (A) (B) (C) (D) | 9 (A) (B) (C) (D)  | 17 (A) (B) (C) (D) | 25 (A) (B) (C) (D) | 33 (A) (B) (C) (D) |
| 2 (A) (B) (C) (D) | 10 (A) (B) (C) (D) | 18 (A) (B) (C) (D) | 26 (A) (B) (C) (D) | 34 (A) (B) (C) (D) |
| 3 (A) (B) (C) (D) | 11 (A) (B) (C) (D) | 19 (A) (B) (C) (D) | 27 (A) (B) (C) (D) | 35 (A) (B) (C) (D) |
| 4 (A) (B) (C) (D) | 12 (A) (B) (C) (D) | 20 (A) (B) (C) (D) | 28 (A) (B) (C) (D) | 36 (A) (B) (C) (D) |
| 5 (A) (B) (C) (D) | 13 (A) (B) (C) (D) | 21 (A) (B) (C) (D) | 29 (A) (B) (C) (D) | 37 (A) (B) (C) (D) |
| 6 (A) (B) (C) (D) | 14 (A) (B) (C) (D) | 22 (A) (B) (C) (D) | 30 (A) (B) (C) (D) | 38 (A) (B) (C) (D) |
| 7 (A) (B) (C) (D) | 15 (A) (B) (C) (D) | 23 (A) (B) (C) (D) | 31 (A) (B) (C) (D) | 39 (A) (B) (C) (D) |
| 8 (A) (B) (C) (D) | 16 (A) (B) (C) (D) | 24 (A) (B) (C) (D) | 32 (A) (B) (C) (D) | 40 (A) (B) (C) (D) |

## SECTION 2 - Quantitative Reasoning

- |                   |                    |                    |                    |                    |
|-------------------|--------------------|--------------------|--------------------|--------------------|
| 1 (A) (B) (C) (D) | 9 (A) (B) (C) (D)  | 17 (A) (B) (C) (D) | 25 (A) (B) (C) (D) | 33 (A) (B) (C) (D) |
| 2 (A) (B) (C) (D) | 10 (A) (B) (C) (D) | 18 (A) (B) (C) (D) | 26 (A) (B) (C) (D) | 34 (A) (B) (C) (D) |
| 3 (A) (B) (C) (D) | 11 (A) (B) (C) (D) | 19 (A) (B) (C) (D) | 27 (A) (B) (C) (D) | 35 (A) (B) (C) (D) |
| 4 (A) (B) (C) (D) | 12 (A) (B) (C) (D) | 20 (A) (B) (C) (D) | 28 (A) (B) (C) (D) | 36 (A) (B) (C) (D) |
| 5 (A) (B) (C) (D) | 13 (A) (B) (C) (D) | 21 (A) (B) (C) (D) | 29 (A) (B) (C) (D) | 37 (A) (B) (C) (D) |
| 6 (A) (B) (C) (D) | 14 (A) (B) (C) (D) | 22 (A) (B) (C) (D) | 30 (A) (B) (C) (D) |                    |
| 7 (A) (B) (C) (D) | 15 (A) (B) (C) (D) | 23 (A) (B) (C) (D) | 31 (A) (B) (C) (D) |                    |
| 8 (A) (B) (C) (D) | 16 (A) (B) (C) (D) | 24 (A) (B) (C) (D) | 32 (A) (B) (C) (D) |                    |

## SECTION 3 - Reading Comprehension

- |                   |                    |                    |                    |                    |
|-------------------|--------------------|--------------------|--------------------|--------------------|
| 1 (A) (B) (C) (D) | 9 (A) (B) (C) (D)  | 17 (A) (B) (C) (D) | 25 (A) (B) (C) (D) | 33 (A) (B) (C) (D) |
| 2 (A) (B) (C) (D) | 10 (A) (B) (C) (D) | 18 (A) (B) (C) (D) | 26 (A) (B) (C) (D) | 34 (A) (B) (C) (D) |
| 3 (A) (B) (C) (D) | 11 (A) (B) (C) (D) | 19 (A) (B) (C) (D) | 27 (A) (B) (C) (D) | 35 (A) (B) (C) (D) |
| 4 (A) (B) (C) (D) | 12 (A) (B) (C) (D) | 20 (A) (B) (C) (D) | 28 (A) (B) (C) (D) | 36 (A) (B) (C) (D) |
| 5 (A) (B) (C) (D) | 13 (A) (B) (C) (D) | 21 (A) (B) (C) (D) | 29 (A) (B) (C) (D) |                    |
| 6 (A) (B) (C) (D) | 14 (A) (B) (C) (D) | 22 (A) (B) (C) (D) | 30 (A) (B) (C) (D) |                    |
| 7 (A) (B) (C) (D) | 15 (A) (B) (C) (D) | 23 (A) (B) (C) (D) | 31 (A) (B) (C) (D) |                    |
| 8 (A) (B) (C) (D) | 16 (A) (B) (C) (D) | 24 (A) (B) (C) (D) | 32 (A) (B) (C) (D) |                    |

## SECTION 4 - Mathematics Achievement

- |                    |                    |                    |                    |                    |
|--------------------|--------------------|--------------------|--------------------|--------------------|
| 1 (A) (B) (C) (D)  | 11 (A) (B) (C) (D) | 21 (A) (B) (C) (D) | 31 (A) (B) (C) (D) | 41 (A) (B) (C) (D) |
| 2 (A) (B) (C) (D)  | 12 (A) (B) (C) (D) | 22 (A) (B) (C) (D) | 32 (A) (B) (C) (D) | 42 (A) (B) (C) (D) |
| 3 (A) (B) (C) (D)  | 13 (A) (B) (C) (D) | 23 (A) (B) (C) (D) | 33 (A) (B) (C) (D) | 43 (A) (B) (C) (D) |
| 4 (A) (B) (C) (D)  | 14 (A) (B) (C) (D) | 24 (A) (B) (C) (D) | 34 (A) (B) (C) (D) | 44 (A) (B) (C) (D) |
| 5 (A) (B) (C) (D)  | 15 (A) (B) (C) (D) | 25 (A) (B) (C) (D) | 35 (A) (B) (C) (D) | 45 (A) (B) (C) (D) |
| 6 (A) (B) (C) (D)  | 16 (A) (B) (C) (D) | 26 (A) (B) (C) (D) | 36 (A) (B) (C) (D) | 46 (A) (B) (C) (D) |
| 7 (A) (B) (C) (D)  | 17 (A) (B) (C) (D) | 27 (A) (B) (C) (D) | 37 (A) (B) (C) (D) | 47 (A) (B) (C) (D) |
| 8 (A) (B) (C) (D)  | 18 (A) (B) (C) (D) | 28 (A) (B) (C) (D) | 38 (A) (B) (C) (D) |                    |
| 9 (A) (B) (C) (D)  | 19 (A) (B) (C) (D) | 29 (A) (B) (C) (D) | 39 (A) (B) (C) (D) |                    |
| 10 (A) (B) (C) (D) | 20 (A) (B) (C) (D) | 30 (A) (B) (C) (D) | 40 (A) (B) (C) (D) |                    |

## Section 1

### Verbal Reasoning

**40 Questions****Time: 20 Minutes**

This section is divided into two parts that contain two different types of questions. As soon as you have completed Part One, answer the questions in Part Two. You may write in your test booklet. For each answer you select, fill in the corresponding circle on your answer document.

#### Part One – Synonyms

Each question in Part One consists of a word in capital letters followed by four answer choices. Select the one word that is most nearly the same in meaning as the word in capital letters.

**SAMPLE QUESTION:****GENERIC:**

- (A) effortless
- (B) general
- (C) strong
- (D) thoughtful

Sample Answer (A)  (B)  (C)  (D)

Go on to the next page. →

**Part Two – Sentence Completion**

Each question in Part Two is made up of a sentence with one or two blanks. One blank indicates that a word is missing. Two blanks indicate that two words are missing. Each sentence is followed by four answer choices. Select the one word or pair of words that best completes the meaning of the sentence as a whole.

**SAMPLE QUESTIONS:**

Always -----, Edgar's late arrival surprised his friends.

- (A) entertaining
- (B) lazy
- (C) punctual
- (D) sincere

Sample Answer

(A)  (B)  (C)  (D)

After training for months, the runner felt ----- that she would win the race, quite different from her ----- attitude initially.

- (A) confident . . . excited
- (B) indifferent . . . concern
- (C) secure . . . apprehensive
- (D) worried . . . excited

Sample Answer

(A)  (B)  (C)  (D)

**STOP.** Do not go on  
until told to do so.



## Part One – Synonyms

**Directions:** Select the word that is most nearly the same in meaning as the word in capital letters.

---

1. GRAVE:

- (A) deadly
- (B) final
- (C) open
- (D) solemn

2. FOMENT:

- (A) articulate
- (B) dissemble
- (C) instigate
- (D) praise

3. INARTICULATE:

- (A) creative
- (B) friendly
- (C) overly sensitive
- (D) tongue-tied

4. AMELIORATE:

- (A) enjoy
- (B) hinder
- (C) improve
- (D) restrain

5. THESIS:

- (A) belief
- (B) paper
- (C) report
- (D) study

6. DEBUNK:

- (A) build
- (B) discredit
- (C) impress
- (D) justify

7. DISDAIN:

- (A) annoy
- (B) contempt
- (C) find
- (D) hope

8. RETICENT:

- (A) anxious
- (B) aware
- (C) informed
- (D) reserved

9. PREVALENT:

- (A) fascinating
- (B) minority
- (C) old-fashioned
- (D) predominant

10. SATIATE:

- (A) deny
- (B) fill
- (C) serve
- (D) starve

*Go on to the next page.* →

11. CANDID:  
(A) defiant  
(B) dejected  
(C) frank  
(D) stingy
12. EMULATE:  
(A) brush off  
(B) imitate  
(C) perplex  
(D) permit
13. TAINT:  
(A) annoy  
(B) handle  
(C) infect  
(D) master
14. ENIGMA:  
(A) effort  
(B) mystery  
(C) struggle  
(D) tantrum
15. DETRIMENTAL:  
(A) considerate  
(B) desolate  
(C) emphatic  
(D) injurious
16. METICULOUS:  
(A) favorable  
(B) finicky  
(C) gigantic  
(D) maddening
17. JUXTAPOSE:  
(A) keep away  
(B) place side by side  
(C) put behind  
(D) question
18. CONGENIAL:  
(A) friendly  
(B) impressive  
(C) inborn  
(D) magical
19. MITIGATE:  
(A) bend  
(B) ease  
(C) harden  
(D) untangle
20. ELUSIVE:  
(A) real  
(B) slippery  
(C) treacherous  
(D) unhappy

Go on to the next page. →

## Part Two – Sentence Completion

**Directions:** Select the word or word pair that best completes the sentence.

---

21. Jane felt ----- about whether to go to the party or not; on one hand it seemed like fun, but on the other, she was very tired.
- (A) ambivalent  
(B) apathetic  
(C) happy  
(D) irritated
22. Like the more famous Susan B. Anthony, M. Carey Thomas ----- feminism and women's rights.
- (A) championed  
(B) defaced  
(C) found  
(D) gained
23. Morality is not -----; cultures around the world have different ideas about how people should be treated.
- (A) debatable  
(B) helpful  
(C) realistic  
(D) universal
24. Although Ms. Sanchez ----- the student that he needed a good grade on the final exam, he did not study at all.
- (A) admonished  
(B) congratulated  
(C) criticized  
(D) ridiculed
25. Thomas Jefferson was a man of ----- talents: he was known for his skills as a writer, a musician, an architect, and an inventor as well as a politician.
- (A) abundant  
(B) frugal  
(C) mundane  
(D) overblown
26. Monica could remain ----- no longer; the injustices she witnessed moved her to speak up.
- (A) active  
(B) furious  
(C) helpful  
(D) reticent
27. Louisa May Alcott's *Little Women* is really quite -----; much of the story is based on her experiences as a young woman growing up in Concord, Massachusetts.
- (A) autobiographical  
(B) fictional  
(C) moving  
(D) visual

Go on to the next page. →

28. Though his lectures could be monotonous, Mr. Cutler was actually quite ----- when he spoke to students in small, informal groups.
- (A) amiable  
(B) pious  
(C) prosaic  
(D) vapid
29. Craig had ----- that the day would not go well, and just as he'd thought, he had two pop quizzes.
- (A) an antidote  
(B) an interest  
(C) a premonition  
(D) a report
30. Far from shedding light on the mystery, Jason's ----- response left people unsure.
- (A) impartial  
(B) opaque  
(C) risky  
(D) systematic
31. Although Marie was a talented and ----- performer, her gifts were often ----- because she didn't know how to promote herself.
- (A) faithful . . . supported  
(B) insulting . . . overlooked  
(C) promising . . . satisfied  
(D) versatile . . . ignored
32. Although she was the daughter of a wealthy slaveholder, Angelina Grimke ----- slavery and ----- her whole life for the cause of abolition.
- (A) desired . . . picketed  
(B) detested . . . dedicated  
(C) hated . . . wasted  
(D) represented . . . fought
33. Rhubarb is actually quite -----, requiring a large amount of sugar to make it -----.
- (A) bitter . . . palatable  
(B) flavorful . . . fattening  
(C) nutritious . . . sickening  
(D) unpopular . . . sticky
34. Because Martha was naturally -----, she would see the bright side of any situation, but Jack had a ----- personality and always waited for something bad to happen.
- (A) cheerful . . . upbeat  
(B) frightened . . . mawkish  
(C) optimistic . . . dreary  
(D) realistic . . . unreasonable
35. Although Edgar was not telling the truth, his ----- succeeded: it ----- the crowd to demand that Edgar's competitor be rejected.
- (A) antipathy . . . questioned  
(B) condone . . . encouraged  
(C) fallacy . . . incited  
(D) lie . . . permitted

Go on to the next page. →



36. Even though the critics praised the author's ----- use of words, they found the text ----- at a mere 100 pages.
- (A) hackneyed . . . threadbare  
(B) improper . . . laconic  
(C) precise . . . short  
(D) sure . . . banal
37. Erica's mother could not ----- why Erica would study a subject as ----- as the culture of 13th century French winemakers.
- (A) fathom . . . esoteric  
(B) intend . . . bizarre  
(C) respond . . . gruesome  
(D) understand . . . interesting
38. The threat of the storm did not ----- Ernie's excitement for the race; he had no ----- running in even the most unpleasant of weather.
- (A) diminish . . . reservations about  
(B) improve . . . concerns about  
(C) lessen . . . inclination to go  
(D) understate . . . abilities for
39. Always -----, Mr. Sanford refused to spend any money on anything unnecessary; to him, even a meal at a restaurant was a ----- excess.
- (A) parsimonious . . . gratuitous  
(B) penurious . . . useful  
(C) spendthrift . . . respectable  
(D) stingy . . . selective
40. To her -----, Margie was given the unfair label of -----, even though her love of the arts was far from superficial.
- (A) chagrin . . . dilettante  
(B) frustration . . . adversary  
(C) irritation . . . performer  
(D) surprise . . . mentor

**STOP.** If there is time,  
you may check your  
work in this section only.



## Section 2

### Quantitative Reasoning

**37 Questions****Time: 35 Minutes**

This section is divided into two parts that contain two different types of questions. As soon as you have completed Part One, answer the questions in Part Two. You may write in your test booklet. For each answer you select, remember to fill in the corresponding circle on your answer document.

Any figures that accompany the questions in this section may be assumed to be drawn as accurately as possible EXCEPT when it is stated that a particular figure is not drawn to scale. Letters such as  $x$ ,  $y$ , and  $n$  stand for real numbers.

#### Part One – Word Problems

Each question in Part One consists of a word problem followed by four answer choices. You may write in your test booklet; however, you may be able to solve many of these problems in your head. Next, look at the four answer choices given and select the best answer.

#### EXAMPLE 1:

What is the value of the expression

$$5 + 3 \times (10 - 2) \div 4 ?$$

- (A) 5
- (B) 9
- (C) 11
- (D) 16

#### Sample Answer

(A)  (B)  (C)  (D)

The correct answer is 11, so circle C is darkened.

Go on to the next page. →

## Part Two – Quantitative Comparisons

All questions in Part Two are quantitative comparisons between the quantities shown in Column A and Column B. Using the information given in each question, compare the quantity in Column A to the quantity in Column B, and choose one of these four answer choices:

- (A) The quantity in Column A is greater.
- (B) The quantity in Column B is greater.
- (C) The two quantities are equal.
- (D) The relationship cannot be determined from the information given.

|   |  |                                  |  |
|---|--|----------------------------------|--|
| EXAMPLE 2:  | <u>Column A</u><br>50% of 40                         | <u>Column B</u><br>20% of 100    | <u>Sample Answer</u><br><input type="radio"/> A <input type="radio"/> B <input checked="" type="radio"/> C <input type="radio"/> D |
| <p>The quantity in <u>Column A</u> (20) is the same as the quantity in <u>Column B</u> (20), so circle C is darkened.</p>   |  |                                  |  |
| EXAMPLE 3:  | y is any real nonzero number<br><u>Column A</u><br>y | <u>Column B</u><br>$\frac{1}{y}$ | <u>Sample Answer</u><br><input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D |
| <p>Since y can be any real number (including an integer or a fraction), there is not enough information given to determine the relationship, so circle D is darkened.</p> |  |                                  |  |

**STOP.** Do not go on  
until told to do so.



## Part One – Word Problems

**Directions:** Choose the best answer from the four choices given.

- Which of the following is greatest?
  - 0.0100
  - 0.0099
  - 0.1900
  - 0.0199
- Which of the following is NOT the product of two prime numbers?
  - 33
  - 35
  - 45
  - 91
- If  $x$ ,  $y$ , and  $z$  are consecutive even integers, then what is the difference between  $x$  and  $z$ ?
  - 0
  - 1
  - 2
  - 4

Questions 4–5 refer to the following chart.

| Clothing Close-out |                  |           |
|--------------------|------------------|-----------|
| Dresses            | Originally \$120 | Now \$90  |
| Coats              | Originally \$250 | Now \$180 |
| Shoes              | Originally \$60  | Now \$40  |
| Hats               | Originally \$40  | Now \$20  |

- Which of the items for sale has the greatest percent discount?
  - Dresses
  - Coats
  - Shoes
  - Hats
- Purchasing which item will save the buyer the most dollars?
  - Dresses
  - Coats
  - Shoes
  - Hats

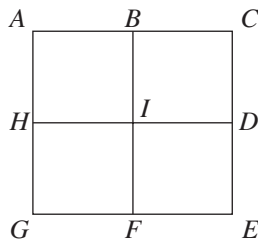
Go on to the next page. 

6. Amy is three years older than Beth and five years younger than Jo. If Beth is  $b$  years old, how old is Jo, in terms of  $b$ ?
- (A)  $2b + 3$   
(B)  $2b - 3$   
(C)  $b + 4$   
(D)  $b + 8$
7. If  $x$  is divided by 5, the remainder is 4. If  $y$  is divided by 5, the remainder is 1. What is the remainder when  $(x + y)$  is divided by 5?
- (A) 0  
(B) 1  
(C) 2  
(D) 3
8. If  $x$  is a factor of  $p$  and  $y$  is a factor of  $q$ , then which of the following is true?
- (A)  $pq$  is a factor of  $xy$ .  
(B)  $pq$  is a multiple of  $x$ .  
(C)  $p$  is a factor of  $xy$ .  
(D)  $p$  is a multiple of  $xy$ .
9. Find the maximum value of  $y$  when  $y = 3x^2 + 2$  and  $-3 \leq x \leq 2$ .
- (A) 2  
(B) 14  
(C) 29  
(D) 50
10. If  $b$  is a positive integer and  $(x + 5)^2 = x^2 + bx + 25$ , then  $b$  is equal to what value?
- (A) 5  
(B) 10  
(C) 20  
(D) 25
11.  $J$  is a whole number divisible by 4.  $J$  is also divisible by 3. Which of the following is NOT a possible value for  $J$ ?
- (A) 12  
(B) 24  
(C) 30  
(D) 36
12. The product of 0.48 and 100 is approximately
- (A) 0.5  
(B) 4.8  
(C) 5  
(D) 50

Go on to the next page. 

13. If the length of a rectangle is increased by 20% and the width of the rectangle is decreased by 10%, what is the percent increase of the area of the rectangle?

(A) 8%  
 (B) 9%  
 (C) 10%  
 (D) 12%



14. Square  $ACEG$  shown above is composed of 4 squares with sides of 1 meter each. Traveling only on the lines of the squares, how many different routes from  $A$  to  $D$  that are exactly 3 meters long are possible?

(A) 2  
 (B) 3  
 (C) 4  
 (D) 5

15. If, in triangle  $ABC$ , the measure of angle  $B$  is greater than  $90^\circ$ , and  $AB = BC$ , what is a possible measure for angle  $C$  in degrees?

(A) 35  
 (B) 45  
 (C) 60  
 (D) It cannot be determined from the information given.

16. Chumway Motors discounts the cost of a car by 10% and then runs another special one-day deal offering an additional 20% off the discounted price. What discount does this represent from the original price of the car?

(A) 28%  
 (B) 30%  
 (C) 40%  
 (D) 72%

17. David scored 82, 84, and 95 on his first three math tests. What score does he need on his fourth test to bring his average up to a 90 ?

(A) 90  
 (B) 92  
 (C) 96  
 (D) 99

Go on to the next page. 

18. Howard has a coin jar filled with only quarters and nickels. If he has a total of 23 coins that equal \$2.15, which of the following could be the number of nickels Howard has in the jar?
- (A) 5  
(B) 10  
(C) 18  
(D) 20
19. If  $p^2 + q^2 = 25$  and  $2pq = 10$ , what is the value of  $(p - q)^2$ ?
- (A) 250  
(B) 100  
(C) 50  
(D) 15
20. The ratio of yellow paint to red paint to white paint needed to make a perfect mixture of orange paint is 3 to 2 to 1. If 36 gallons of orange paint are needed to paint a cottage, how many gallons of red paint will be needed?
- (A) 2  
(B) 6  
(C) 12  
(D) 15

Go on to the next page. 

## Part Two – Quantitative Comparisons

**Directions:** Using all information given in each question, compare the quantity in Column A to the quantity in Column B. All questions in Part Two have these answer choices:

- (A) The quantity in Column A is greater.
- (B) The quantity in Column B is greater.
- (C) The two quantities are equal.
- (D) The relationship cannot be determined from the information given.

|     | <u>Column A</u> | <u>Column B</u> |
|-----|-----------------|-----------------|
| 21. | 25% of 50       | 50% of 25       |

A piggy bank is filled with nickels and pennies, totaling \$2.10, and the number of pennies is double the number of nickels. (Note: 1 nickel = \$0.05 and 1 penny = \$0.01.)

|     | <u>Column A</u>                | <u>Column B</u> |
|-----|--------------------------------|-----------------|
| 22. | The total value of the nickels | \$1.75          |

360 is the product of 4 consecutive integers.

|     | <u>Column A</u>                            | <u>Column B</u> |
|-----|--|-----------------|
| 23. | The greatest of the 4 consecutive integers | 6               |

|     | <u>Column A</u> | <u>Column B</u> |
|-----|-----------------|-----------------|
| 24. | $x^2$           | $x^3$           |

|     | <u>Column A</u>              | <u>Column B</u> |
|-----|------------------------------|-----------------|
| 25. | $8 - 20 \div 2 \times 5 + 3$ | 20              |

Go on to the next page. 



**Answer choices for all questions on this page.**

- (A) The quantity in Column A is greater.  
 (B) The quantity in Column B is greater.  
 (C) The two quantities are equal.  
 (D) The relationship cannot be determined from the information given.

$$(x + 2)(x - 2) = 0$$

|     | <u>Column A</u> | <u>Column B</u> |
|-----|-----------------|-----------------|
| 26. | $x$             | 2               |

|     | <u>Column A</u>         | <u>Column B</u> |
|-----|-------------------------|-----------------|
| 27. | $\sqrt{36} + \sqrt{16}$ | $\sqrt{52}$     |

|     | <u>Column A</u> | <u>Column B</u> |
|-----|-----------------|-----------------|
| 28. | $3^{12}$        | $9^6$           |

|     | <u>Column A</u>                   | <u>Column B</u> |
|-----|-----------------------------------|-----------------|
| 29. | The volume of a solid cube is 27. | 3               |
|     | The height of the cube            |                 |

$$\frac{x + 2}{y + 2} = \frac{x}{y}$$

|     | <u>Column A</u> | <u>Column B</u> |
|-----|-----------------|-----------------|
| 30. | $x$             | $y + 2$         |

|     | <u>Column A</u>                                  | <u>Column B</u>                                       |
|-----|--|---|
| 31. | The sum of the integers from 1 to 100, inclusive | The sum of the even integers from 1 to 200, inclusive |

|     | <u>Column A</u> | <u>Column B</u> |
|-----|-----------------|-----------------|
| 32. | $x$             | 5               |

Go on to the next page. →

**Answer choices for all questions on this page.**

- (A) The quantity in Column A is greater.  
 (B) The quantity in Column B is greater.  
 (C) The two quantities are equal.  
 (D) The relationship cannot be determined from the information given.

- |     | <u>Column A</u>                          | <u>Column B</u>              |
|-----|--|------------------------------|
| 33. | $\left(\frac{1}{5}\right)^{\frac{1}{2}}$ | $\left(\frac{1}{5}\right)^4$ |

---

A card is drawn from a standard deck and a 6-sided number cube, numbered 1 to 6, is rolled.

- |     | <u>Column A</u>   | <u>Column B</u>  |
|-----|---|--|
| 34. | If a king is drawn from the deck, the probability of rolling an even number | If a spade is drawn from the deck, the probability of rolling a number less than 4 |

---

When they are in season, a farmer sells turnips for \$1.80 per bunch. At the beginning of the off-season, this farmer increases the price per bunch by 10%; however, at the end of the off-season, the farmer decreases by 10% the price of turnips per bunch.

- |     | <u>Column A</u>   | <u>Column B</u> |
|-----|---|-----------------|
| 35. | The price of turnips per bunch at the end of the off-season | \$1.80          |

---

A box contains 4 cookies, 5 brownies, and 6 doughnuts. Two items are removed from the bag.

- |     | <u>Column A</u>                              | <u>Column B</u>   |
|-----|--|---|
| 36. | The probability that both items are brownies | The probability that one item is a cookie and the other is a doughnut |

---

A triangle has two sides measuring 4 and 6, respectively.

- |     | <u>Column A</u>                            | <u>Column B</u> |
|-----|--|-----------------|
| 37. | The greatest possible area of the triangle | 12              |

**STOP. If there is time, you may check your work in this section only.**



## Section 3

### Reading Comprehension

---

36 Questions

Time: 35 Minutes

This section contains six short reading passages. Each passage is followed by six questions based on its content. Answer the questions following each passage on the basis of what is stated or implied in that passage. You may write in the test booklet.

**STOP.** Do not go on  
until told to do so.



## Questions 1–6

*Line*

1 New Orleans was the site of the last  
2 major battle during the War of 1812,  
3 a lengthy conflict between British and  
4 American troops. The Battle of New  
5 Orleans in January 1815 was one of the  
6 greatest victories in American military  
7 history. However, the great success of this  
8 battle did not actually bring about the end of  
9 the war. Surprisingly, the Treaty of Ghent,  
10 which declared the end of the war, had  
11 already been signed by both sides a month  
12 earlier.

13 How was that possible? There were two  
14 major reasons. The first is that New Orleans  
15 was relatively isolated and communication  
16 in the growing United States was not as  
17 simple as it is today. Thus, it is possible that  
18 the British commanders and the American  
19 general, Andrew Jackson, did not realize a  
20 treaty had been signed before they started  
21 their battle. A second reason is that there is  
22 a difference between a signed treaty and a  
23 ratified treaty. Even if all soldiers fighting in  
24 and around New Orleans had known of the  
25 treaty, it had not yet been ratified by the U.S.  
26 Senate. Thus, though the Treaty of Ghent  
27 took place in December prior to the Battle of  
28 New Orleans, the war did not officially end  
29 until February 1815, when the Senate ratified  
30 the treaty.

31 Had the combatants in New Orleans  
32 known of the treaty, they might have  
33 avoided a tough battle, especially the  
34 British. In the battle, a force of about 4,000  
35 American troops decisively defeated an  
36 enemy of nearly twice its size. At stake for  
37 the soldiers was control of the waterways of  
38 the Mississippi, and the fighting was fierce.  
39 A combination of tactical mistakes and bad  
40 weather doomed the British attack, costing  
41 them nearly 2,000 soldiers injured or killed.  
42 The Americans lost fewer than 200. But  
43 was the terrible battle all for nothing? Some  
44 historians suggest that victory that day was  
45 crucial for the American military in order  
46 to enforce and help quickly ratify the peace  
47 treaty. Potentially, with an American loss in  
48 New Orleans, the British could have found  
49 hope to continue the conflict.

Go on to the next page. →

1. The primary purpose of the passage is to
  - (A) blame the British for fighting an unnecessary war
  - (B) celebrate the tactical military maneuvers of Andrew Jackson
  - (C) convince readers that peace treaties are often worthless
  - (D) provide greater details about the end of a historical conflict
2. The passage suggests that all of the following occurred near the end of the War of 1812 EXCEPT
  - (A) Andrew Jackson ignored the orders of President Madison
  - (B) communication with the battle line commanders was slow
  - (C) the Treaty of Ghent was signed
  - (D) weather conditions hurt the efforts of the British soldiers
3. Which of the following is implied by the passage?
  - (A) Andrew Jackson did not know the difference between a signed treaty and a ratified treaty.
  - (B) President Madison did not realize the Battle of New Orleans was possible.
  - (C) The British may have had a chance for victory with better conditions and preparation.
  - (D) The British troops knew of the treaty but attacked anyway.
4. According to the passage, New Orleans was a strategic battle site because
  - (A) it was the only location where American forces were better supplied than the British forces
  - (B) the American forces would be trapped in the swamplands if they lost
  - (C) the British were attempting to defeat a more numerous force
  - (D) the Mississippi River was nearby and control of it was important
5. After which of the following was the War of 1812 officially at an end?
  - (A) Both armies signing the Treaty of Ghent
  - (B) British retreat from the Mississippi
  - (C) The Battle of New Orleans
  - (D) The Senate's ratification of the Treaty of Ghent
6. According to the passage, a treaty
  - (A) cannot be signed by the president without the consent of the Senate
  - (B) has sometimes been ignored by those in battle
  - (C) is always used to end a war
  - (D) is not effective until it is ratified by the Senate

**Go on to the next page. →**

Questions 7–12

Line

1 According to game maker Hasbro,  
2 approximately 750 million people have  
3 played the well-known game *Monopoly*  
4 since it was invented in the 1930s. Charles  
5 Darrow is typically credited as the inventor  
6 of the world’s most famous board game.  
7 However, he likely derived his version of  
8 *Monopoly* from one of several other games  
9 similarly involving realty buying and selling  
10 that were already in existence prior to the  
11 1930s when he got his patent for the game.  
12 A probable reason that Darrow’s  
13 *Monopoly* became the hugely successful  
14 game that still exists today is that he took  
15 a diligent approach to producing it. Other  
16 similar games existed, but some of them  
17 had no board or regulation pieces. With  
18 help from his wife and son who adorned the  
19 sets with detail, Darrow personally created  
20 the pieces and boards that became the first  
21 *Monopoly* game sets. His extra work in  
22 creating the entire environment that players  
23 needed gave his game something extra that  
24 other variations did not have.

25 Darrow had marginal success selling  
26 his games in various parts of the country.  
27 Several Philadelphia area stores were  
28 the first to carry his game and sell it in  
29 large quantities. Despite this, Darrow had  
30 difficulty selling his game to the major game  
31 manufacturer of the time, Parker Brothers.  
32 He was told that his game was too complex  
33 and had fundamental errors in its design  
34 that would limit its appeal. Ultimately, the  
35 continued sales he managed on his own  
36 forced Parker Brothers to reassess the  
37 worth of his game. Eventually, the company  
38 agreed to produce the game and shortly  
39 thereafter it became the bestselling game in  
40 the country.

41 That success turned Charles Darrow  
42 into a millionaire, which is the ultimate  
43 irony. Darrow initially began work on  
44 *Monopoly* to help support himself and his  
45 family following the financial troubles tied  
46 to the stock market crash of 1929.

47 Thus, Charles Darrow became a  
48 millionaire by producing a game that allows  
49 “regular” people to feel like they are buying  
50 and selling homes and real estate like  
51 millionaires.

Go on to the next page. →

7. The best title for this passage would be
- (A) “A Comparison of Several Early Real Estate Board Games”
  - (B) “How Hasbro Introduced *Monopoly* to the World”
  - (C) “The Early History of Charles Darrow’s *Monopoly*”
  - (D) “Two Views of Charles Darrow’s Life”
8. It is suggested by the passage that
- (A) Darrow decided to make his game less complex after initially meeting with Parker Brothers
  - (B) Darrow had no other skills to use after the stock market crash of 1929
  - (C) Parker Brothers probably doubted that a complex game could sell well
  - (D) Philadelphia was the only major city where he could sell his game
9. As used in line 49, “regular” refers to people who
- (A) rent rather than own property
  - (B) are in the top 1% of wealthiest people
  - (C) love to play board games
  - (D) are in a lower economic class than millionaires
10. With which of the following would the author be LEAST likely to agree?
- (A) Charles Darrow chose to continue to sell his game despite criticisms.
  - (B) Charles Darrow is not the first person to conceive of a board-based real estate game.
  - (C) Charles Darrow preferred to achieve his goals without the help of others.
  - (D) Some of the things Darrow chose to do helped make his game sell better than other games.
11. Which of the following was NOT mentioned by the author as contributing to the ultimate success of *Monopoly*?
- (A) Darrow’s efforts to initially sell the game on his own
  - (B) The addition of specific pieces and a playing board in each set
  - (C) The adjustments Parker Brothers made to the game
  - (D) The enjoyment people get in pretending to be millionaires
12. The author suggests in the third paragraph that
- (A) certain errors in *Monopoly* served to limit its appeal
  - (B) Charles Darrow sold his game in Philadelphia because he knew it would be popular there
  - (C) *Monopoly* was initially too complex to be popular
  - (D) some people doubted that *Monopoly* would be popular

Go on to the next page. →

Questions 13–18*Line*

1 Every year, hundreds of hopeful  
2 students arrive in Washington, D.C., in  
3 order to compete in the National Spelling  
4 Bee. This competition has been held  
5 annually since 1925 and is sponsored by  
6 E.W. Scripps Company. The sponsors  
7 provide both a trophy and a monetary award  
8 to the champion speller. In the competition,  
9 students under 16 years of age take turns  
10 attempting to properly spell words as  
11 provided by the moderator. The champion  
12 is the sole remaining student who does not  
13 make a mistake.

14 Most American students are familiar  
15 with the concept of a spelling bee because  
16 it is practiced in many schools throughout  
17 the country. The National Spelling Bee,  
18 however, is a much bigger setting and  
19 showcases only the best spellers from all  
20 parts of the nation. Students who appear  
21 at the National Spelling Bee have already  
22 won competitions at local and state levels.  
23 Winning the competition nowadays requires  
24 the ability to perform under intense pressure  
25 against very talented students in front  
26 of a large audience. A student who wins  
27 the event in the twenty-first century will  
28 experience a much different challenge than  
29 the first winner, Frank Neuhauser, did in  
30 1925 when he defeated only nine other  
31 competitors.

32 Clearly, the 95 years of the National  
33 Spelling Bee’s existence attests to the  
34 importance of spelling in the English  
35 language. However, struggles with spelling  
36 English words go back much more than  
37 95 years. The captivating thing about  
38 spelling correctly in English is that it is in  
39 many ways without rules. English language  
40 has a powerful capacity to absorb new  
41 words from other languages and in doing so  
42 make them “English” words. As a result of  
43 this ability to borrow from other languages,  
44 the sheer number of words in English is  
45 much higher than any other language. Thus,  
46 spelling in many other languages involves  
47 fewer words, fewer rules, and fewer odd  
48 exceptions to those rules. It turns out that a  
49 spelling bee in most other languages would  
50 be a waste of time. Why is that? Well,  
51 without the myriad exceptions to common  
52 vocabulary, there would be very few words  
53 that everyone didn’t already know.

**Go on to the next page. →**



13. The author mentions “other languages” in line 41 in order to point out that
- (A) English-language spelling bees are unnecessarily complex
  - (B) one challenge in English-language spelling bees is the number of words that can be tested
  - (C) spelling bees are at least 95 years old
  - (D) words are harder to spell in English than in any other language
14. According to the passage, what is a major difference between the first National Spelling Bee and today’s competition?
- (A) Spellers in the past did not expect the competition to grow so large.
  - (B) The competition no longer focuses on only English words.
  - (C) There are more competitors.
  - (D) The words used today are significantly harder.
15. In line 51, the word “myriad” most nearly means
- (A) confusing
  - (B) dangerous
  - (C) linguistic
  - (D) numerous
16. Which of the following can be inferred from the passage?
- (A) A competitor at the National Spelling Bee has already won at least one smaller spelling bee.
  - (B) E.W. Scripps Company desires to eliminate poor spelling in America.
  - (C) Frank Neuhauser would not do well in today’s competition.
  - (D) The competition has grown too large.
17. The author of the passage intends to
- (A) compare the presentation of the current National Spelling Bee with the structure in the past
  - (B) contrast the English language with other languages
  - (C) investigate the role that vocabulary plays in our lives
  - (D) review the history and current form of the National Spelling Bee
18. The author’s attitude toward winners of the National Spelling Bee is
- (A) admiring
  - (B) critical
  - (C) indifferent
  - (D) questioning

**Go on to the next page. →**

## Questions 19–24

*Line*

1 The idea of black holes was developed  
2 by Karl Schwarzschild in 1916. Since then,  
3 many different scientists have added to the  
4 theory of black holes in space. A black hole  
5 is usually defined as a very dense celestial  
6 body from which nothing, not even light,  
7 can escape. But from what do black holes  
8 originate?

9 A black hole begins as a star. A star  
10 burns hydrogen, and this process, called  
11 fusion, releases energy. The energy released  
12 outward works against the star's own  
13 gravity pulling inward and prevents the star  
14 from collapsing. After millions of years  
15 of burning hydrogen, the star eventually  
16 runs out of fuel. At this point, the star's  
17 own gravity and weight cause it to start  
18 contracting.

19 If the star is small and not very heavy,  
20 it will shrink just a little and become a white  
21 dwarf when it runs out of fuel. White dwarf  
22 stars do not emit much energy, so they are  
23 usually not visible without a telescope.

24 If the star is bigger and heavier, it will  
25 collapse very quickly in an implosion. If the  
26 matter that remains is not much heavier than  
27 our Sun, it will eventually become a very  
28 dense neutron star. However, if the matter  
29 that remains is more than 1.7 times the  
30 mass of our Sun, there will not be enough  
31 outward pressure to resist the force of  
32 gravity, and the collapse will continue. The  
33 result is a black hole.

34 The black hole will have a boundary  
35 around it called the horizon. Light and  
36 matter can pass over this boundary to enter,  
37 but they cannot pass back out again—this is  
38 why the hole appears black. The gravity and  
39 density of the black hole prevent anything  
40 from escaping.

41 Scientists are still adding to the black  
42 hole theory. They think they may have  
43 found black holes in several different  
44 galaxies, and as they learn more about them,  
45 scientists will be able to understand more  
46 about how black holes are formed and what  
47 happens as the holes change.

Go on to the next page. →

19. The purpose of the question in the first paragraph is to
- (A) illustrate how little we know about black holes
  - (B) indicate the source of the facts quoted in the passage
  - (C) interest the reader in the topic of the passage
  - (D) set a goal for independent research
20. According to the passage, which of the following causes a collapsing star to become a neutron star?
- (A) Mass greater than 1.7 times that of our Sun
  - (B) Mass less than 1.7 times that of our Sun
  - (C) Remaining fuel that can be used in fusion
  - (D) Slow, brief shrinkage process
21. The passage suggests that if we were to send a satellite to the horizon of a black hole, it would probably
- (A) begin spinning uncontrollably and fly apart
  - (B) be immediately repelled from the black hole
  - (C) be pulled into the black hole and not come back out
  - (D) enter, and then immediately exit, the black hole
22. According to the passage, which of the following is an effect of the process of fusion?
- (A) The star does not immediately collapse.
  - (B) The star generates hydrogen.
  - (C) The star survives millions of years longer than average.
  - (D) The white dwarf fails to produce light.
23. Black holes appear black because
- (A) only a little energy escapes them
  - (B) only one galaxy contains them
  - (C) they are extraordinarily large
  - (D) they do not eject light they have absorbed
24. Which of the following best describes the organization of the passage?
- (A) It discusses the biggest, heaviest celestial bodies before moving on to the smaller, lighter ones.
  - (B) It introduces the topic and then narrates chronologically the process by which stars become black holes.
  - (C) It uses a personal story to introduce the topic, and then compares and contrasts black holes.
  - (D) It uses the example of one specific black hole in order to generalize.

**Go on to the next page. →**

Questions 25–30*Line*

1 The midterm elections of 2014 had  
2 the lowest voter turnout of any American  
3 election cycle since World War II, with only  
4 36.4 percent of the eligible voting public  
5 casting a ballot. What is most disturbing  
6 about this number is that it was less than  
7 100 years ago that 200 women marched on  
8 the White House, incurring public scorn,  
9 arrest, and even torture, to secure the vote  
10 for half the American public.

11 Women’s Suffrage, the movement  
12 dedicated to securing women’s right to  
13 vote in the United States, began in earnest  
14 in the 1840s. Several Women’s Rights  
15 Conventions were held throughout the 19th  
16 century, beginning with the Seneca Falls  
17 Convention of 1848, during which attendees  
18 officially passed a resolution in favor of  
19 Women’s Suffrage. Over the next 70 years,  
20 many brave women fought for the cause of  
21 basic gender equality.

22 This fight came to a head in 1917, when  
23 members of the National Women’s Party,  
24 led by Alice Paul, picketed outside the  
25 White House in order to influence President  
26 Wilson and Congress to pass an amendment  
27 to the United States Constitution that  
28 would enfranchise women and guarantee  
29 their voting rights. This was the first time  
30 in the history of the United States that the  
31 White House was picketed, and it was

32 done so in an orderly and peaceful fashion.  
33 After months of nonviolent protest, police  
34 arrested over 200 women for blocking a  
35 public sidewalk in July 1917.

36 Paul and many of her followers  
37 underwent a hunger strike during their  
38 incarceration to protest the deplorable  
39 conditions of the prison, which resulted  
40 in many women being force-fed and Paul  
41 herself being moved to the psychiatric  
42 ward of the hospital. The rest were sent  
43 to the Occoquan Workhouse. It was at  
44 this workhouse that the most terrible and  
45 significant event of the Women’s Suffrage  
46 movement would occur. Dubbed the “Night  
47 of Terror,” 44 guards armed with clubs  
48 attacked 33 women protesters as they  
49 returned to the house. They were brutally  
50 beaten, choked, and one was stabbed to  
51 death. These events infuriated the nation  
52 when they were exposed, and within two  
53 weeks a judge had ordered the prisoners  
54 released and cleared of all charges.

55 Due to the widespread gain of support  
56 these women earned through their peaceful  
57 protest and physical endurance, as well as  
58 the work of countless men and women of  
59 the previous 70 years, the 19th Amendment  
60 was added to the Constitution three years  
61 later, on August 20, 1920.

Go on to the next page. →

25. The main purpose of the passage is to
- (A) portray Alice Paul as an integral figure of the Women’s Suffrage movement
  - (B) attribute the adoption of the 19th Amendment solely to the Night of Terror
  - (C) describe the actions taken by part of the American public to secure equal voting rights
  - (D) demonstrate the terrible actions of guards against women’s rights protestors
26. The word “exposed” as used in line 52 most closely means
- (A) unprotected
  - (B) bare
  - (C) revealed
  - (D) buried
27. Which of the following best expresses the author’s attitude toward the percentage of voter turnout mentioned in the first paragraph?
- (A) Shock
  - (B) Reassurance
  - (C) Pessimism
  - (D) Terror
28. According to the author, the most probable legacy of the Night of Terror is
- (A) President Wilson’s pardon of the protestors
  - (B) the imprisonment of the 44 guards who attacked the protestors
  - (C) the desired delay of the 19th amendment for several years
  - (D) the right to vote for women
29. Which of the following does the passage imply was a reason for the protestors’ hunger strike?
- (A) They were attempting to improve the environment of their captivity.
  - (B) They were resisting being force-fed at the prison.
  - (C) They wanted to be able to use the sidewalk for peaceful protest.
  - (D) They were unable to eat after being choked during the Night of Terror.
30. The author believes that the National Women’s Party’s tactics are best described as
- (A) calm but pointless
  - (B) disorderly but successful
  - (C) violent and immediate
  - (D) nonviolent and effective

**Go on to the next page. →**

## Questions 31–36

*Line*

1 He was one of the greatest scientists of  
2 this age. In fact, he was perhaps one of the  
3 greatest scientists of any age. Yet he owed  
4 much of his success not to mathematics  
5 or physics or any other science but to a  
6 disease. He was Stephen Hawking.

7 Born in 1942, three hundred years after  
8 the death of Galileo, Stephen Hawking  
9 had an unimpressive start to his scholarly  
10 pursuits. At his revered English primary  
11 school, St. Albans, he was considered by  
12 his teachers a good, but not exceptional,  
13 student. It was not evident at the time that  
14 he would become internationally acclaimed  
15 as a leader in several scientific fields.

16 He continued this moderately successful  
17 academic trend at University College in  
18 Oxford. Again, his professors thought him  
19 to be intelligent, but not extraordinary in  
20 his efforts. Both his cleverness and lack  
21 of diligence were noticed by some of his  
22 instructors.

23 After graduating from Oxford, he  
24 continued to Cambridge, another excellent  
25 school. Clearly, Hawking was moving  
26 forward into a good science career.  
27 However, it was at this time that he  
28 encountered a life-changing challenge. He  
29 was diagnosed with a disease that affects  
30 and damages the nervous system. That

31 meant that he was eventually going to lose  
32 control of his muscles and spend his life in  
33 a wheelchair. Surprisingly though, Hawking  
34 credited this event with making his outlook  
35 on life strong again. He claimed that until  
36 then, he was often bored by life. For a man  
37 with such a powerful mind, that makes  
38 sense. He was talented, but he saw little use  
39 for his talent and felt no pressure to work  
40 hard. His diagnosis and impending physical  
41 problems forced him to start living life to  
42 the fullest.

43 Most of Stephen Hawking's  
44 contributions to science came after learning  
45 of his disease. His work in the field of  
46 physics has influenced the greatest scientists  
47 alive. Though he passed away before the  
48 technology became possible, he had hoped  
49 to take a trip into space with the help of  
50 influential friends. Though he moved only  
51 with a special wheelchair and spoke only  
52 with the help of a computerized speech  
53 enhancer for the last several decades of his  
54 life, he still had the ability to contribute  
55 to the world. He credited his disease  
56 with forcing him to face the limited time  
57 available in one lifetime. Stephen Hawking  
58 made a crippling disease the source of one  
59 of the greatest scientific careers the world  
60 has known. Through his misfortune, he  
61 learned to reach his greatest potential.

Go on to the next page. →

31. The author's tone is best described as
- (A) remorseful
  - (B) admiring
  - (C) pitying
  - (D) scornful
32. The purpose of the last line of the first paragraph ("He was Stephen Hawking") is to
- (A) reveal an answer to a riddle
  - (B) specify a subject who has already been introduced
  - (C) answer a question the author asked earlier
  - (D) name the greatest scientist of all time
33. Which of the following describes Stephen Hawking's attitude toward his disease?
- (A) Actively nonchalant
  - (B) Bitterly irate
  - (C) Ironically appreciative
  - (D) Unreservedly giddy
34. According to the second paragraph, Stephen Hawking was seen by some as
- (A) often disrespectful
  - (B) particularly brilliant
  - (C) somewhat lazy
  - (D) uniquely energetic
35. The passage does all of the following EXCEPT
- (A) demonstrate a connection between Stephen Hawking's disease and his success as a physicist
  - (B) describe a goal Hawking wanted to achieve
  - (C) note particular theories developed by Hawking
  - (D) set forth educational institutions attended by Hawking
36. The passage can best be described as focusing primarily on
- (A) biographical details
  - (B) medical diagnoses
  - (C) scientific discoveries
  - (D) technological advancements

**STOP. If there is time,  
you may check your  
work in this section only.**



## Section 4

### Mathematics Achievement

---

**47 Questions****Time: 40 Minutes**

Each question is followed by four suggested answers. Read each question and then decide which one of the four suggested answers is best.

Find the row of spaces on your answer document that has the same number as the question. In this row, mark the space having the same letter as the answer you have chosen. You may write in your test booklet.

**SAMPLE QUESTION:****Sample Answer** (A)  (B)  (C)  (D)

What is the perimeter of an isosceles triangle with two sides of 4 cm and one side of 6 cm?

- (A) 10 cm
- (B) 14 cm
- (C) 16 cm
- (D) 24 cm

The correct answer is 14 cm, so circle B is darkened.

**STOP.** Do not go on  
until told to do so.





1. Which of the following pairs of numbers are the two different prime factors of 36 ?

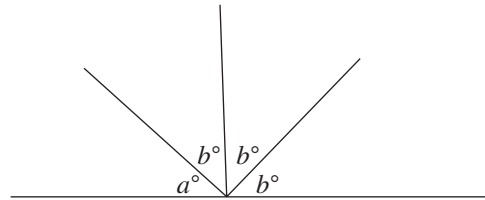
(A) 2 and 3  
(B) 3 and 4  
(C) 3 and 12  
(D) 4 and 9

2. For what nonzero value of  $x$  will the expression  $\frac{x - 3}{4x}$  be equal to 0 ?

(A) -3  
(B) -2  
(C) 1  
(D) 3

3. Two positive whole numbers are in a ratio of 3 to 4. If the smaller of the two numbers is 9, what is the average of the two numbers?

(A) 4  
(B) 10  
(C) 10.5  
(D) 12



4. The four angles in the figure above share a common vertex on a straight line. What is the value of  $b$  when  $a$  equals  $42^\circ$  ?

(A)  $38^\circ$   
(B)  $40^\circ$   
(C)  $42^\circ$   
(D)  $46^\circ$

5. What is 85% of 50 ?

(A) 150.75  
(B) 135  
(C) 42.5  
(D) 39

6. A set of three positive integers has a sum of 11 and a product of 36. If the smallest of the three numbers is 2, what is the largest?

(A) 2  
(B) 4  
(C) 6  
(D) 9

Go on to the next page.  $\rightarrow$

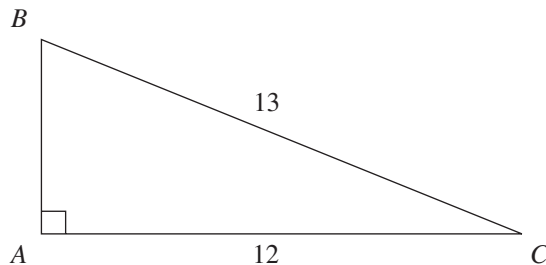
7. What is two-thirds of one-half?

- (A)  $\frac{1}{3}$
- (B)  $\frac{7}{6}$
- (C)  $\frac{1}{2}$
- (D)  $\frac{2}{3}$

8. If the distance around an oval-shaped track is 400 meters, how many laps does a runner have to run to cover a distance of 4 kilometers?

(1 kilometer = 1,000 meters)

- (A) 4
- (B) 10
- (C) 15
- (D) 1,000



9. In triangle  $ABC$  shown above, the length of side  $AB$  is

- (A) 5
- (B) 7
- (C) 11
- (D) 14

10. Find the value of  $\frac{2.7 \times 10^7}{3.0 \times 10^{-3}}$ .

- (A)  $9.0 \times 10^{10}$
- (B)  $9.0 \times 10^9$
- (C)  $9.0 \times 10^4$
- (D)  $9.0 \times 10^3$

11. MegaMusic decides to decrease the price of a digital song from \$1.60 to \$1.20. The percent decrease for this digital song is

- (A) 20%
- (B) 25%
- (C)  $33\frac{1}{3}\%$
- (D) 40%

12. There are  $x$  students in Mrs. Sproul's class, 4 fewer than twice as many as are in Mrs. Puccio's class. If there are  $y$  students in Mrs. Puccio's class, then what is the value of  $y$  in terms of  $x$ ?

- (A)  $\frac{x}{2} + 2$
- (B)  $2x + 4$
- (C)  $2x - 4$
- (D)  $\frac{x}{2} - 4$

Go on to the next page.  $\rightarrow$

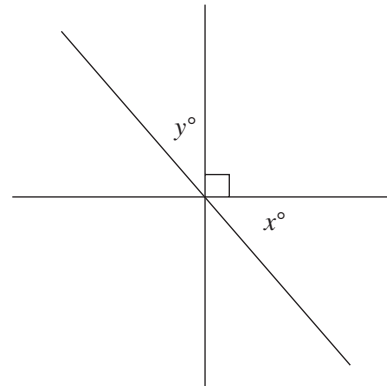
Questions 13–14 refer to the following definition.

For all real numbers  $x$ ,

$\#x = x^2$  if  $x$  is negative;

$\#x = 2x$  if  $x$  is positive.

13.  $\#(-6) - \#(6) =$
- (A)  $-24$   
 (B)  $16$   
 (C)  $24$   
 (D)  $30$
14. What is the value of  $\#[\#x - \#y]$  when  $x = 3$  and  $y = -4$ ?
- (A)  $-10$   
 (B)  $12$   
 (C)  $32$   
 (D)  $100$



15. In the figure above, what is the value of  $x$  in terms of  $y$ ?
- (A)  $y$   
 (B)  $90 - y$   
 (C)  $90 + y$   
 (D)  $180 - y$
16.  $\frac{4a^4b^6c^3}{2a^3b^5c^2} =$
- (A)  $\frac{2ac}{b}$   
 (B)  $\frac{ac}{b}$   
 (C)  $\frac{2b}{c}$   
 (D)  $2abc$

Go on to the next page.  $\rightarrow$

17. In Mr. Johannessen's class,  $\frac{1}{4}$  of the students failed the final exam. Of the remaining students in the class,  $\frac{1}{3}$  scored an A. What fraction of the whole class passed the test but scored below an A?
- (A)  $\frac{1}{4}$   
(B)  $\frac{5}{12}$   
(C)  $\frac{1}{2}$   
(D)  $\frac{7}{12}$
18. When buying new clothes for school, Rena spends \$20 more than Karen and \$50 more than Lynn does. If Rena spends  $r$  dollars, then what is the cost of all three of their purchases in terms of  $r$ ?
- (A)  $r + 70$   
(B)  $\frac{r + 70}{3}$   
(C)  $3r - 70$   
(D)  $r + 210$
19. In a group of 100 children, there are 34 more girls than there are boys. How many boys are in the group?
- (A) 33  
(B) 37  
(C) 67  
(D) 68
20. Samantha made a chart of her students' favorite types of books.

**FAVORITE TYPE OF BOOK**

| Type of Book | Number of Students |
|--------------|--------------------|
| Mystery      | 8                  |
| Fantasy      | 20                 |
| Sci-Fi       | 10                 |
| Other        | 2                  |

A circle graph is made using the data. What is the central angle of the portion of the graph representing Sci-Fi?

- (A)  $10^\circ$   
(B)  $25^\circ$   
(C)  $45^\circ$   
(D)  $90^\circ$

Go on to the next page. 

21. At Nicholas's Computer World, computers usually sold for \$1,500 are now being sold for \$1,200. What fraction of the original price is the new price?
- (A)  $\frac{1}{10}$   
(B)  $\frac{1}{5}$   
(C)  $\frac{3}{4}$   
(D)  $\frac{4}{5}$
22. If  $\frac{3}{x} = \frac{y}{4}$ , then
- (A)  $xy = 12$   
(B)  $3y = 4x$   
(C)  $\frac{x}{y} = \frac{4}{3}$   
(D)  $3x = 4y$
23. The ratio of boys to girls at Delaware Township School is 3 to 2. If there is a total of 600 students at the school, how many are girls?
- (A) 120  
(B) 240  
(C) 360  
(D) 400
24. 150% of 40 is
- (A) 30  
(B) 40  
(C) 50  
(D) 60
25. Jane studied for her math exam for 4 hours last night. If she studied  $\frac{3}{4}$  as long for her English exam, how many hours did she study all together?
- (A) 3  
(B)  $4\frac{3}{4}$   
(C) 6  
(D) 7
26.  $\frac{0.966}{0.42} =$
- (A) 0.23  
(B) 2.3  
(C) 23  
(D) 230

Go on to the next page. 

27. Nicole was able to type 35 words per minute. If she increased her speed to 42 words per minute, what was the percent increase in her typing speed?

(A)  $16\frac{2}{3}\%$   
 (B) 20%  
 (C) 70%  
 (D) 71%

28. The first term in a series of numbers is 50. Each subsequent term is one-half the term before it if the term is even, or one-half rounded up to the next whole number if the term is odd. What is the third term in this sequence?

(A) 13  
 (B) 24  
 (C) 30  
 (D) 40

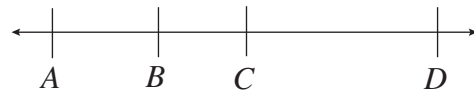
29. Sophia recorded the number of siblings each student in her class has in the table below.

SIBLINGS OF EACH STUDENT

| Number of Siblings | Number of Students with that Number of Siblings |
|--------------------|---|
| 0                  | 6   |
| 1                  | 10  |
| 2                  | 8   |
| 3                  | 6   |
| 4                  | 1   |
| 5                  | 1   |

What is the mode of the data?

(A) 1  
 (B) 2  
 (C) 6  
 (D) 10



30. On the number line shown above, if segment  $BD$  has a length of 18, segment  $AB$  has a length of 5, and segment  $CD$  has a length of 12, then segment  $AC$  has a length of

(A) 6  
 (B) 11  
 (C) 17  
 (D) 23

Go on to the next page.

31. The decimal representation of  $2 + 40 + \frac{1}{100}$  is
- (A) 24.1  
(B) 24.01  
(C) 42.1  
(D) 42.01
32. What is the least possible integer divisible by 2, 3, 4, and 5 ?
- (A) 30  
(B) 40  
(C) 60  
(D) 90
33. If a car travels at  $x$  miles per hour, in terms of  $x$  and  $y$ , how long does it take it to travel  $y$  miles?
- (A)  $\frac{2x}{y}$   
(B)  $xy$   
(C)  $\frac{y}{x}$   
(D)  $\frac{x}{y}$
34. Triangles  $ABC$  and  $PQR$  are similar. The length of  $\overline{BC}$  is 4 and the length of  $\overline{QR}$  is 12. If the area of  $ABC$  is 6, what is the area of  $PQR$  ?
- (A) 54  
(B) 24  
(C) 18  
(D) 15
35. James buys one halibut steak and two salmon steaks for \$30.00. Dave buys two halibut steaks and four salmon steaks for \$60.00. If halibut steaks cost  $x$  dollars each and salmon steaks cost  $y$  dollars each, what is the value of  $x$  ?
- (A) \$5.00  
(B) \$8.00  
(C) \$10.00  
(D) It cannot be determined from the information given.
- Question 36 refers to the following definition.
- For all positive integer values of  $x$ ,
- $(x) = \frac{1}{2}x$  if  $x$  is even;  
 $(x) = 2x$  if  $x$  is odd.
36.  $(1 + 5) =$
- (A) 2  
(B) 3  
(C) 4  
(D) 6
37. Which of the following equals  $2(4z + 1)$  ?
- (A)  $2z + \frac{1}{2}$   
(B)  $2z + 1$   
(C)  $4z + 2$   
(D)  $8z + 2$

Go on to the next page. 

38. The stem-and-leaf plot shown represents the length, in minutes, of movies that Janet watched over the summer.

| Stem | Leaf          |
|------|---------------|
| 10   | 8 9           |
| 11   | 1 2 2 5 5 6 7 |
| 12   | 0 3 4 8       |
| 13   | 2 4 6 6 7 7 9 |
| 14   | 2 3 3 8 9 9   |
| 15   | 7             |

What is the median length, in minutes, of the movies Janet watched?

- (A) 130  
(B) 132  
(C) 133  
(D) 136
39. Zoo A has 3 monkeys. Zoo B has 8 monkeys. Zoo C has 16 monkeys. What is the average number of monkeys at the three zoos?
- (A) 3  
(B) 7  
(C) 9  
(D) 27
40. A steak costs \$4 more than a hamburger, and a hamburger costs \$4 more than a grilled cheese sandwich. If six grilled cheese sandwiches cost  $2x$  dollars, how much will 4 steaks and 2 hamburgers cost?
- (A)  $2x + 40$   
(B)  $2x + 48$   
(C)  $6x + 34$   
(D)  $12x + 40$
41. What is the solution set to the inequality  $3 - 2x > 9$  ?
- (A)  $-3 < x < 6$   
(B)  $-6 < x < 3$   
(C)  $x < -3$  or  $x > 6$   
(D)  $x < -6$  or  $x > 3$
42.  $100xy$  is what percent of  $xy$  ?
- (A) 10  
(B) 100  
(C) 1,000  
(D) 10,000
43. If Matt's home is four miles from school and Laura's home is eight miles from school, then the distance from Matt's home to Laura's home is
- (A) 4 miles  
(B) 8 miles  
(C) 12 miles  
(D) It cannot be determined from the information given.
44. Two partners divide a profit of \$2,000 so that the difference between the two amounts is half of their average. What is the ratio of the larger to the smaller amount?
- (A) 6:1  
(B) 5:3  
(C) 4:1  
(D) 2:1

Go on to the next page. 



45. What is the total value, in cents, of  $j$  coins worth 10 cents each and  $j + 5$  coins worth 25 cents each?
- (A)  $35j + 125$   
(B)  $35j + 5$   
(C)  $10j + 130$   
(D)  $2j + 5$
46. A box of coins has 6 pennies, 3 nickels, 4 dimes, and 5 quarters. If two coins are selected at random, what is the probability that the first coin is a penny and the second coin is a quarter?
- (A)  $\frac{11}{18}$   
(B)  $\frac{17}{18}$   
(C)  $\frac{6}{18} \times \frac{5}{18}$   
(D)  $\frac{6}{18} \times \frac{5}{17}$
47. The formula for the volume of a cone is  $\frac{1}{3}\pi r^2 h$ , where  $r$  is the radius of the circular base and  $h$  is the height of the cone. What is the radius of a cone with a volume of  $12\pi$  and a height of 4?
- (A) 3  
(B) 4  
(C) 8  
(D) 9

**STOP.** If there is time,  
you may check your  
work in this section only.



## Essay

---

You will have 30 minutes to plan and write an essay on the topic printed on the other side of this page. **Do not write on another topic. An essay on another topic is not acceptable.**

The essay is designed to give you an opportunity to show how well you can write. You should try to express your thoughts clearly. How well you write is much more important than how much you write, but you need to say enough for a reader to understand what you mean.

You will probably want to write more than a short paragraph. You should also be aware that a copy of your essay will be sent to each school that will be receiving your test results. You are to write only in the appropriate section of the answer sheet. Please write or print so that your writing may be read by someone who is not familiar with your handwriting.

You may make notes and plan your essay on the reverse side of the page. Allow enough time to copy the final form onto your answer sheet. You must copy the essay topic onto your answer sheet, on page 3, in the box provided.

Please remember to write only the final draft of the essay on pages 3 and 4 of your answer sheet and to write it in blue or black pen. Again, you may use cursive writing or you may print. Only pages 3 and 4 will be sent to the schools.

***Directions continue on next page.***





